

WHAT IS CLAIMED IS:

1. An aluminum alloy-and-resin composition composite comprising:

a shaped aluminum alloy material having a surface
5 with a surface roughness of 5 μm to 50 μm and having fine recesses or projections of not larger than 1 μm on said surface; and

10 a thermoplastic resin composition fixed to the surface of said shaped aluminum alloy material by entering said recesses or engaging said projections, said thermoplastic resin composition containing as a main component a polybutylene terephthalate resin or polyphenylene sulfide having an average coefficient of lengthwise and crosswise linear expansion of 2 to
15 $4 \times 10^{-5}^{\circ}\text{C}^{-1}$.

2. An aluminum alloy-and-resin composition composite comprising:

a shaped aluminum alloy material having a surface with a surface roughness of 1 μm to 10 μm and having fine
20 recesses or projections of 0.01 μm to 0.1 μm in diameter on said surface, said surface being covered with a + trivalent aluminum compound having an average thickness of about 0.001 μm ; and

25 a thermoplastic resin composition fixed to the surface of said shaped aluminum alloy material by entering said recesses or engaging said projections, said thermoplastic resin composition containing as a main component a polybutylene terephthalate resin or

polyphenylene sulfide having an average coefficient of lengthwise and crosswise linear expansion of 2 to $4 \times 10^{-5}^{\circ}\text{C}^{-1}$.

3. An aluminum alloy-and-resin composition composite
5 according to claim 1 or 2, wherein said recesses or projections include first recesses or first projections having a first diameter of 0.03 μm to 0.1 μm and a depth about equal to or larger than said first diameter, wherein the number of first recesses or first projections per 1 μm
10 square area of said surface is not less than 10, and said recesses or projections further include second recesses or second projections having a second diameter of 0.01 μm to 0.03 μm and a depth about equal to or larger than said second diameter, wherein the number of second recesses or
15 second projections per 1 μm square area of said surface is not less than 50.

4. (Canceled)

5. (Amended) An aluminum alloy-and-resin composition composite according to any one of claims 1 to 3, wherein
20 said thermoplastic resin composition is fixed to the surface of said shaped aluminum alloy material by inserting said shaped aluminum alloy material into an injection mold and injecting said thermoplastic resin composition into said injection mold.

25 6. A production method for the aluminum alloy-and-resin composition composite according to any one of claims 1 to 3, said production method comprising the steps of:
producing a coated shaped aluminum alloy material

having a thin polyalkylene terephthalate film or polyphenylene sulfide adhering to a surface thereof from said shaped aluminum alloy material and an organic solvent solution of a polyalkylene terephthalate resin or

5 polyphenylene sulfide;

inserting said coated shaped aluminum alloy material into an injection mold; and

injecting said polyalkylene terephthalate resin or polyphenylene sulfide into said injection mold.

10 7. (Canceled)

8. A production method for the aluminum alloy-and-resin composition composite according to any one of claims 1 to 3, said production method comprising the steps of:

heating said shaped aluminum alloy material to not
15 lower than 200°C; and

melting said polyalkylene terephthalate resin or polyphenylene sulfide and bringing it into contact with said shaped aluminum alloy material under pressure.

9. A production method for the aluminum alloy-and-
20 resin composition composite according to any one of claims 1 to 3, said production method comprising the steps of:

dipping said shaped aluminum alloy material in an aqueous solution of at least one selected from the group consisting of hydrazine, ammonia, and an amine compound;

25 inserting said dipped shaped aluminum alloy material into an injection mold; and

injecting said polyalkylene terephthalate resin or polyphenylene sulfide into said injection mold.

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Brief Statement Explaining Amendment under Article 19(1)

Claim 4, which recites that the shaped aluminum alloy material and the polybutylene terephthalate resin or polyphenylene sulfide are fixed to each other by bonding using an adhesive, has been canceled in view of the relationship with the cited reference.

Claim 7, which recites that the shaped aluminum alloy material and the polybutylene terephthalate resin or polyphenylene sulfide are fixed to each other by bonding using a coating of a paint or an ink applied to the shaped aluminum alloy material, has been canceled in view of the relationship with the cited reference.

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The present invention enables the shaped aluminum alloy material and the polybutylene terephthalate resin or polyphenylene sulfide to be fixed to each other without using a coating material such as an adhesive or a paint.

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Claim 5 has been amended to clarify the feature that the aluminum alloy-and-resin composition composite is obtained by inserting the shaped aluminum alloy material into an injection mold and injecting the polyalkylene terephthalate resin or polyphenylene sulfide into the injection mold.